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● A new species of the genus *Prismognathus* Motschulsky (Coleoptera: Lucanidae) from Yunnan, China

Cheng-Bin WANG¹ & Tian-Long HE^{2*}

¹Engineering Research Center for Forest and Grassland Disaster Prevention and Reduction, Mianyang Normal University, Mianyang 621000, Sichuan Province, China;  <https://orcid.org/0000-0002-7913-8779>;  entomologist@qq.com

²Donghuaxincheng, Wangfenggang, Xiejiaji District, Huainan 232046, Anhui Province, China;  <https://orcid.org/0000-0001-7301-5105>;  htl1988@qq.com

*Corresponding author

Abstract: A new species of stag beetle, *Prismognathus helii* **sp. nov.**, which has a distinct notch on each ultimate antennomere, is described from Yunnan Province, China. Colour plates are presented to illustrate its diagnostic characters.

Keywords: Lucaninae, Lucanini, morphology, Oriental Realm, stag beetle, taxonomy

● 中国云南鬼锹属一新种（鞘翅目：锹甲科）

王成斌¹ & 贺天龙^{2*}

¹森林与草原防灾减灾工程研究中心，绵阳师范学院，绵阳 621000，四川省，中国

²东华鑫城，望峰岗，谢家集区，淮南 232046，安徽省，中国

*通讯作者

摘要: 本文描述了一个产于中国云南省之触角末节具明显凹缺的锹甲新种——何力鬼锹 *Prismognathus helii* **sp. nov.**，并提供了彩色图版以说明其鉴别特征。

关键词: 锹甲亚科，锹甲族，形态，东洋区，锹甲，分类

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Introduction

The genus *Prismognathus* Motschulsky 1860 belongs to the tribe Lucanini of the subfamily Lucaninae (Huang & Chen 2013), including 39 known species from eastern Palaearctic Realm and Oriental Realm (Huang & Chen 2012, 2017, 2018; Bartolozzi *et al.* 2016; Huang *et al.* 2020; unpublished data of the authors); among them, 30 species (excluding subspecies) are recorded from China. Huang & Chen (2012) reviewed the genera *Prismognathus* and *Cladophyllus* Houlbert, 1912 from China, and also treated *Cyclorasis* Thomson, 1862 and *Tetrarthrius* Didier, 1926 as valid genera. Later, through their morphological phylogenetic analysis (Huang & Chen 2013), Huang & Chen (2017) synonymized the above-mentioned three genera with *Prismognathus*.

The present study on *Prismognathus* material from Yunnan Province of China yielded one new species which has a distinct notch on ultimate antennomere. Important morphological characteristics of the new species are illustrated.

Material and methods

Specimen was relaxed and softened in a HH-2 digital homeothermic water bath at 44.4°C for 12 hours and then placed in distilled water for cleaning and dissection. In order to examine the male genitalia, the abdomen was detached and treated with a 10% solution of potassium hydroxide for 12 hours, then transferred to distilled water to flush the remaining KOH and stop any further bleaching. After examination, the dissected body parts were mounted on a slide using Euparal Mounting Medium for future studies. Images were taken with a Canon macro photo lens MP-E 65 mm on a Canon 5DsR. Images of the same object at different focal planes were combined using Zerene Stacker 1.04 stacking software. Adobe Photoshop CS6 was used for postprocessing. The terminology adopted in this paper for external features of the body and genitalia follows Holloway (2007) and Huang & Chen (2010, 2013, 2017). Measurement criteria in millimetres (mm) follow Wang & Zhou (2019).

The holotype is deposited in **BMNH**—Natural History Museum (formerly British Museum), London, United Kingdom.

Taxonomy

Prismognathus Motschulsky, 1860 鬼锹属

Prismognathus helii sp. nov. 何力鬼锹

<https://zoobank.org/BD814433-3EAD-4F52-A589-B49E3C4D31A2>

Figs 1A, B; 2A–E; 3A–E; 4A–D

Type material. Holotype: ♂ (BMNH), **CHINA, Yunnan:** Pingbian County, Daweishan Nature Reserve [大围山自然保护区], 2050 m, 19.VIII.2019, Tian-Long He leg.

Etymology. The new species is dedicated to Mr. Li He (Chengdu, China), an enthusiastic amateur entomologist. The name is a noun in the genitive case.

Description. Holotype, male. Body length 26.8 mm; 2.6 times as long as wide, widest around anterior 1/3 of elytra. Length of particular parts (mm): head (3.1), mandible (4.8), pronotum (5.0), elytra (13.9); width (mm): head (7.0), pronotum (9.7), elytra (10.2).

Habitus (Fig. 1A, B). Color almost entirely blackish brown. Body moderately lustrous and glabrous.

Head (Fig. 2C–E) 2.3 times as broad as long, broadest at eyes, surface finely punctate. Vertex gradually depressed in a triangular area bordered by anterolateral angles and posterior margin of head. Frontal margin deeply and roundly emarginate in medial part. Anterolateral angles protruded. Clypeolabrum small, tuberculate. Canthus not exceeding outer margin of eye. Preocular margin substraight. Postocular margin straight. Mandible long, about 1.6 times as long as head; outer margin distinctly bisinuate, moderately incurved at apex; apex bifurcated, with

dorsal tooth; ventral surface with 7–8 median teeth, continuous from apex to basal 2/5, and a gap between median teeth and double subbasal teeth; dorsal ridge with subbasal tooth at basal 1/3. Antennal club (Fig. 2A, B) with three pubescent antennomeres; antennomere 7 rather sharply acuminate, 1.5 times as wide as antennomere 6; antennomeres 8–10 lamellate; antennomere 10 with a distinct notch at apex of medial extension. Mentum subtrapezoidal, micropunctate, with anterolateral angles rounded. Submentum inverted trapezoidal, micropunctate. Gula elongate, smooth.

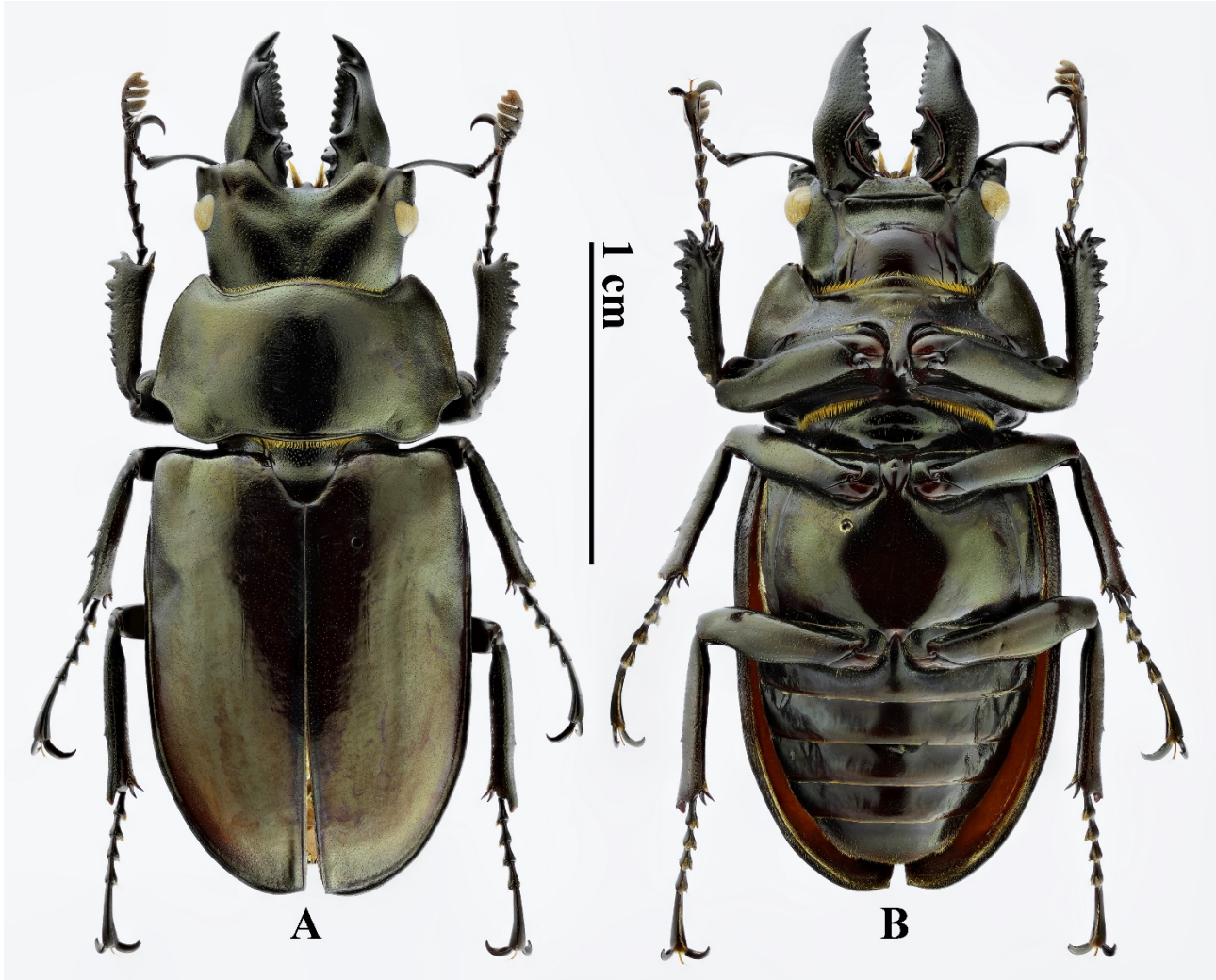


FIGURE 1. Habitus of *Prismognathus helii* sp. nov., holotype, ♂: **A** dorsal view **B** ventral view.

Pronotum (Fig. 2C) 1.9 times as wide as long, widest at lateral angles, and 1.4 times as wide as head. Lateral margin minutely crenulate, weakly curved before lateral angle and distinctly concave after. Posterior margin bisinuate. Lateral angles at posterior 2/7, roundly blunt. Posterior angles widely rounded. Surface smooth, finely punctate except at midline.

Scutellar shield linguiform. Surface finely punctate, attenuating posteriorly.

Elytra 1.4 times as long as wide, widest around anterior 1/3, and 1.1 times as wide as pronotum. Surface micropunctate and smooth, without striations or large punctures.

Legs. Protibia with 4–5 large teeth and 8–11 denticles along outer margin; apex forked with sharp branches at apex. Mesotibia with one lateral spine and one denticle. Metatibia with one lateral denticle.

Male genitalia. Abdominal tergite VIII (Fig. 3A) subhexagonal, only slightly membranous along midline anteriorly; sternite VIII (Fig. 3B) rather transverse, without membranous area. Abdominal tergite IX (Fig. 3C, D)

widely emarginate at anterior margin; pleurite IX (Fig. 3C) dorsally approaching; sternite IX (Fig. 3E) only with a small membranous area in middle of posterior part. Aedeagus with paramere (Fig. 4A) about 2/3 of length of basal piece, without basal process, and with distinctly upturned apex rounded (Fig. 4C); basal piece (Fig. 4A, D) distinctly constricted in anterior part, with pair of sclerotized dorsal plates; ventral caudal plate (Fig. 4A) excavated medially, with bottom of split posterior to ventral margin of basal piece; median lobe (Fig. 4A, B) about 4/5 of length of paramere, with each bilateral branches subtriangular in apical part, and slightly curved at apical margin; flagellum (Fig. 4A–D) short, about as long as aedeagus, belt-like in basal 4/5, thread-like in distal 1/5 but slightly enlarged at apex.

Female. Unknown.

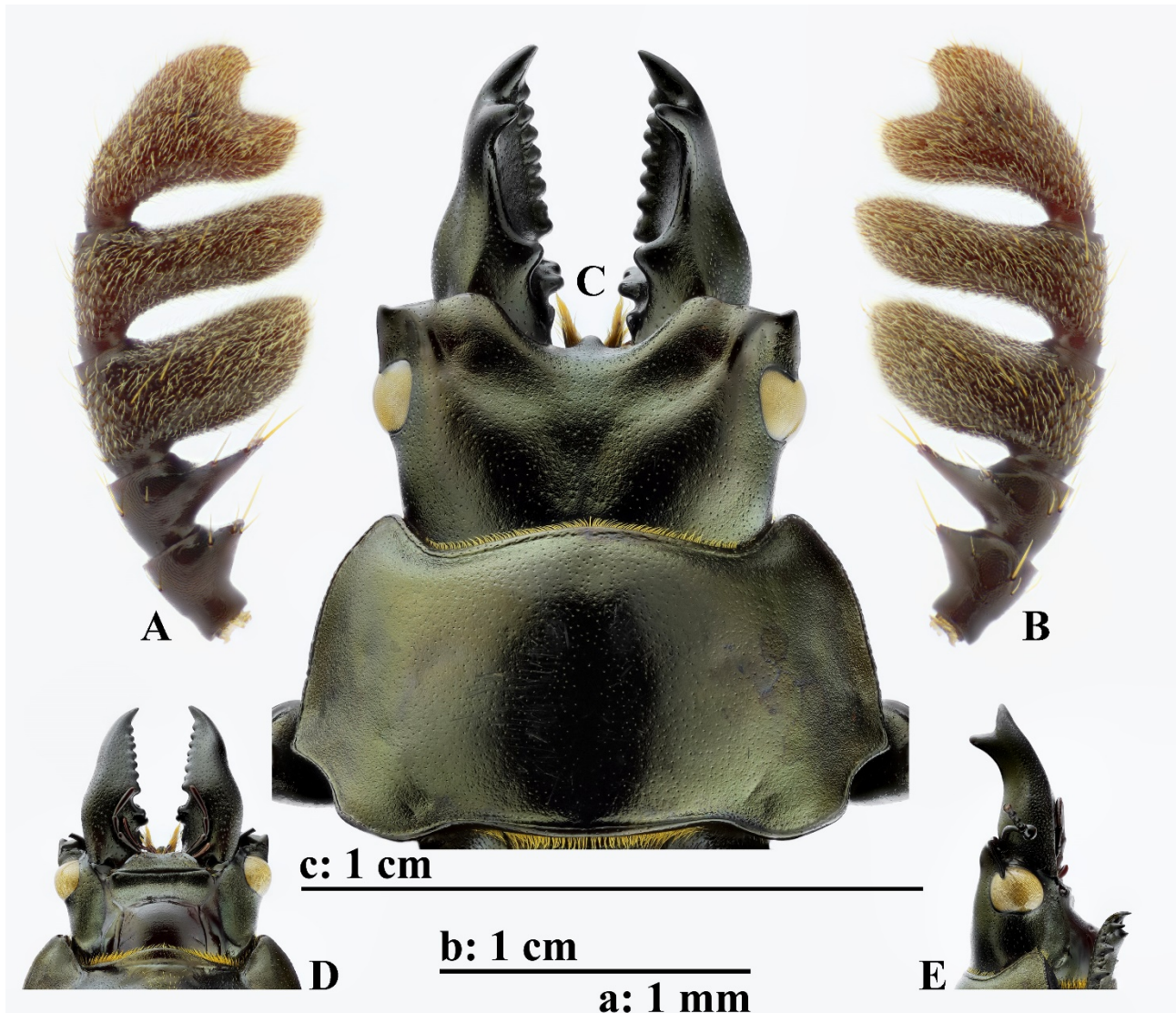


FIGURE 2. Head and pronotum of *Prismognathus helii* sp. nov., holotype, ♂: **A** antennomeres 6–10, ventral view **B** ditto, dorsal view **C** head and pronotum, dorsal view **D** head, ventral view **E** ditto, lateral view. Scale a for A, B, b for D, E and c for C.

Differential diagnosis. There are only four species in the genus *Prismognathus* that have a distinct notch on each ultimate antennomere in males: *P. delislei* Endrödi, 1971, *P. helii* sp. nov., *P. mixtus* Huang & Chen, 2017 and *P. zhangii* Huang & Chen, 2013. The new species is easily distinguished from *P. delislei* and *P. zhangii* by the combination of the following characters: clypeolabrum not emarginate (emarginate in *P. delislei*); mandibular dorsal tooth present and closer to apex (absent in *P. delislei*, present but remoter to apex in *P. zhangii*); mandibular gap between median teeth and subbasal teeth smaller (larger in *P. zhangii*); head and pronotum finely punctate (more

coarsely punctate in *P. zhangii*); lateral angles of pronotum roundly blunt (sharper in *P. zhangii*); median lobe with each bilateral branches slightly curved at apical margin (straight in *P. zhangii*); ventral caudal plate excavated medially (not excavated medially in *P. zhangii*).

P. helii **sp. nov.** can be distinguished from *P. mixtus*, as well as *P. bousqueti* Boucher, 1996, *P. nobuhikoi* Ikeda, 2000 and *P. oberthuri* Houlbert, 1912, by the combination of the following characters (base on males): head broader; width ratio of head to pronotum higher; mandible longer and wider; number of mandibular median teeth more.

The male of the new species is also somewhat similar to *P. shani* Huang & Chen, 2012 from Sichuan, but it is distinguished from the latter by the following characters (those of *P. shani* in brackets): anterolateral angles of head protruded (obtuse); mandible with outer margin distinctly bisinuate, moderately incurved at apex (straight, strongly incurved at apex); preocular margin of head substraight (slightly convex); postocular margin of head straight (slightly swollen); median lobe with each bilateral branches subtriangular in apical part (subround in apical part); ventral caudal plate of basal piece with bottom of split posterior to ventral margin (anterior to ventral margin).

Distribution. China (Yunnan).



FIGURE 3. Male abdominal segments VIII & IX of *Prismognathus helii* **sp. nov.**, holotype, ♂: **A** tergite VIII, dorsal view **B** sternite VIII, ventral view **C** tergite and pleurite IX, dorsal view **D** ditto, lateral view **E** sternite IX, ventral view.



FIGURE 4. Aedeagus of *Prismognathus helii* sp. nov., holotype, ♂: **A** ventral view **B** ventrolateral view **C** lateral view **D** dorsal view.

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Additional information

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